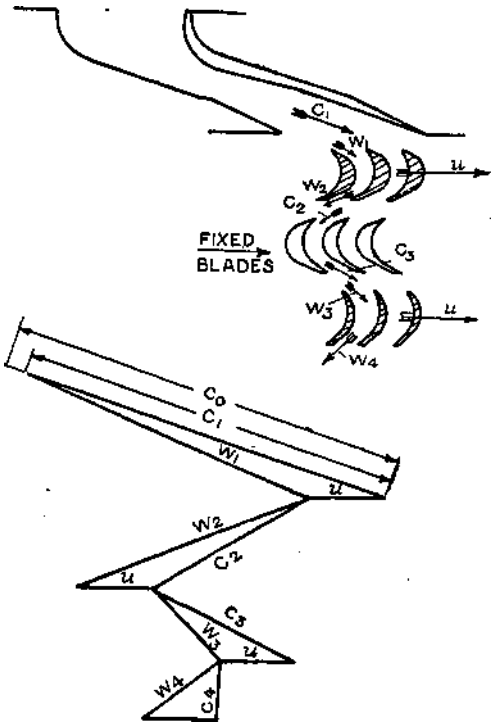

Reaction Blading. — In the reaction type of turbine the expansion is divided almost evenly between both the fixed and moving blades. As has already been described (Chap. II), the blading of this type of machine is usually identical for both the fixed and moving elements. Also, as the expansion which occurs in each row is comparatively small the increase in volume of the steam is not great; it is thus usual practice to divide the blading into " expansions" or groups of several rows, the blading throughout each expansion being identical. It is thus obvious that as the steam expands through any group of blading its velocity must increase slightly from row to row. For most

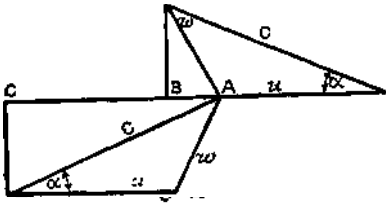

Fig. 9.—Velocity Diagram for One Stage of a Reaction Turbine

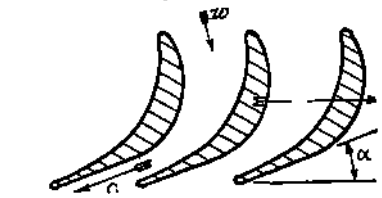

Fig. 8.—Diagram for Impulse Turbine Compounded for Velocity

purposes it is usually sufficiently accurate to base the calculations on the mean specific volume of the steam in any group.

Fig. 9 shows the blading of a single stage comprising one fixed and one moving row. Steam enters the fixed blade at a velocity *w*. In passing through this blading a heat drop occurs and the velocity of discharge is C.

Thus if h = heat available in each row, assuming no frictional losses:

Available energy due to heat drop = increase of kinetic energy.

$$Jh = \frac{C^2}{2g} - \frac{w^2}{2g},$$

whence $C^2 = 2gJh + w^2$.

In an actual blade, however, as